

REMARKS

By the present amendment, independent claim 1 has been amended to incorporate the features of dependent claims 31 and 32 therein, while clarifying additional features and independent claims 4 and 30 have been amended in a similar manner. More particularly, as described in connection with Figs. 16(a)-16(d) at pages 24 and 25 of the Substitute Specification, in step 2 which occurs after step 1 of Fig. 16(b), etching of the polysilicon 503 which is provided on a thin underlying oxide film 502 is etched as a main part of the process which is referred to as a main etch (page 24, lines 15-17). As described in the paragraph bridging pages 24 and 25 of the specification, since the profile control in this step 2 is the most important, the rf bias power supply 109 is on-off modulated in step 2 and etching is carried out with a selectivity of 20 and an etching time of 35 seconds. The profile after completion of step 2 is shown in Fig. 16(c) and the time in step 2 was set so as to leave a small amount of the polysilicon 503. As described in the first full paragraph at page 25 of the specification, in the last step 3, since the thin underlying oxide film 502 is exposed, the parameters are changed so that the selectivity is high even if the etch rate of the polysilicon is lowered. As described, rather than on-off modulation of the rf bias power supply 109 as described with respect to step 2, continuous power of the rf bias power supply is applied and the selectivity is 50 and as further described, by raising the selectivity, the process can be performed while the underlying oxide film is sufficiently left without a etch residue of the polysilicon 503.

By the present amendment, independent claims 1, 4 and 30 have been amended to clarify the aforementioned features. More particularly, in addition to describing a sample having a film formed on a thin underlying film, which film is etched as a main part of etching, each of the claims recite the feature of on-off modulating the rf bias voltage by effecting modulation of the rf bias voltage for one period of anisotropic etching treatment of the sample which is prior to another period of etching treatment of the surface of the sample in which selectivity is higher than

selectivity at the one period and in which modulation of the rf bias voltage is not effected. That is, in accordance with the previously recited features, on-off modulation is effected in one period which is prior to another period, and the selectivity in the another period during which modulation of the rf bias voltage is not effected is higher than the selectivity at the one period during which on-off modulation of the rf bias voltage is effected. Furthermore, by the present amendment, the independent claims have been amended to set forth the features that the one period of anisotropic etching treatment in which the modulation of the rf bias voltage is effected is applied to the film as a main part of etching, and the another period of etching treatment in which the modulation of the rf bias voltage is not effected and having a higher selectivity than the selectivity in the one period is applied to a small amount of the film which remains before the thin underlying film is exposed. Applicants note that independent claim 30 refers to a first layer and a second thin layer which underlies the first layer, and it is apparent that these features are clearly described in the specification of this application.

Turning to the rejection of claims 1, 4 and 30-32 and 34-36 under 35 U.S.C. 102(b) as being anticipated by US 5,352,324 issued to Gotoh et al, this rejection is traversed insofar as it is applicable to the present claims, and reconsideration and withdrawal of the rejection are respectfully requested.

As to the requirements to support a rejection under 35 U.S.C. 102, reference is made to the decision of In re Robertson, 49 USPQ 2d 1949 (Fed. Cir. 1999), wherein the court pointed out that anticipation under 35 U.S.C. §102 requires that each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. As noted by the court, if the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if the element is "inherent" in its disclosure. To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and

that it would be so recognized by persons of ordinary skill." Moreover, the court pointed out that inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.

Irrespective of the Examiner's contention concerning the various features of Gotoh et al, applicants submit that Gotoh et al discloses in connection with Figs. 8 and 9 thereof etching of a Si_3N_4 film which is deposited on an oxide film of SiO_2 in the manner illustrated in Fig. 9, wherein initially continuous RF power is applied for etching of the Si_3N_4 film, and as the etching approaches the SiO_2 film so that a small amount of the Si_3N_4 film remains, modulation of the RF power is then effected, wherein a lower etching selectivity is obtained during the modulation than that obtained with the continuous power. That is, as described, the first radio frequency bias value corresponding to a first etching gas composition provides a high selectivity in the stable state and the second radio frequency bias value corresponding to a second etching gas composition provides a low selectivity. Thus, as illustrated in Fig. 9, in a continuous bias power is applied, a high selectivity is obtained and wherein switching or modulation between the first and second radio frequency bias values is obtained, a lower selectivity is necessarily obtained, which in relation to the claimed features of this application, represents no modulation in one period with high selectivity and modulation in another period with lower selectivity, which is directly contrary to the claimed features of independent claims 1, 4 and 30 and the dependent claims thereof. As is apparent, Gotoh et al teaches applying modulation after modulation is not applied and the modulation is effected with respect to the small amount of the Si_3N_4 which remains prior to etching thereof for exposing the SiO_2 underlying film. Such features are contrary to the claimed features of this application and applicants submit that independent claims 1, 4 and 30 and the dependent claims patentably distinguish over Gotoh et al in the sense of 35 U.S.C. 102 and should be considered allowable thereover.

Further, applicants submit that irrespective of the Examiner's contentions regarding Gotoh et al, the other features of the independent and dependent claims are not disclosed or taught by Gotoh et al and when such features are considered with the features discussed above, the claims further patentably distinguish over Gotoh et al.

In view of the above amendments and remarks, applicants submit that all claims present in this application should now be in condition for allowance, and issuance of an action of a favorable nature is courteously solicited.

To the extent necessary, applicant's petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (520.36911CX2) and please credit any excess fees to such deposit account.

Respectfully submitted,



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